OKUWAZO OLUWATOYIN EUNICE

300L

CHOTP, UNIVERSITY COLLEGE HOSPITAL.

PRINCIPLE OF AND COMMUNICABLE DISEASE AND EPIDEMIOLOGY

ASSIGNMENT

1. Discuss COmmunicable diseases under the following headings:

Causative agent

Modes of transmission

Methods of prevention and control

Communicable disease also known as infectious or contagious diseases are caused by pathogenic microorganisms such as bacterium,virus,fungi and parasite and can be transmitted from one person to another either directly or indirectly thought contact with an infected individual or indirectly via vectors like insect, or through contaminated water, air, food and surfaces.

(a) Causative agent can be defined as the microorganism or pathogen that is responsible for causing an infectious disease such as bacteria, virus,fungus, or parasite.

E.g The causative organism for Tuberculosis is Mycobacterium tuberculosis.

(b) Modes of transmission means how an infectious agent, also called a pathogen, can be transferred from one person, object, or animal, to another.

Modes of transmission can be direct or indirect

DIRECT CONTACT: This takes place through skin-to-skin contact, kissing and sexual intercourse. However, Direct contact does not only refer to contact between humans.

Direct contact with contaminated soil is also possible as well as through contact with fomites such as pen ,phone torch e.t.c. E g HIV , Herpes e.t.c

Infection through respiratory droplets is a form of direct contact, such as through sneezing, coughing, or talking.

E.g COVID 19, Influenza

INDIRECT CONTACT: Infectious diseases can also be spread indirectly through the air and other mechanisms. For example:

1. Airborne transmission

Some infectious agents can travel long distances and remain suspended in the air for an extended period of time. E.g Measles.

2. Contaminated objects

Some organisms can live on objects for a short time. If you touch an object, such as doorknob,soon after a person with an infectious disease, you might be exposed to infection. Transmission

occurs when you touch your mouth, nose, or eyes before thoroughly washing your hands.

Germs can also be spread through blood products and medical supplies containing the virus or bacteria.

3. Food and drinking water

Infectious diseases can be transmitted via food and water containing the virus or bacteria.E. coli is often transmitted through improperly handled produce or undercooked meat. Improperly canned foods can create an environment ripe for Clostridium botulinum, which can lead to botulism.

4. Animal-to-person contact

Some infectious diseases can be transmitted from an animal to a person. This can happen when an animal with an infection bites or scratches you, or when you handle animal waste. The Toxoplasma gondii parasite can be found in cat feces.

5. Animal reservoirs

Animal-to-animal disease transmission can sometimes transfer to humans. Zoonosis occurs when diseases are transferred from animals to people. Zoonotic diseases include:

anthrax (from sheep)

rabies (from rodents and other mammals)

West Nile virus (from birds)

plague (from rodents)

6. Insect bites (vector-borne disease)

Some zoonotic infectious agents are transmitted by insects, especially those that suck blood. These include mosquitos, fleas, and ticks.

E.g Malaria, West Nile virus, and Lyme disease are all spread this way.

7. Environmental reservoirs

Soil, water, and vegetation containing infectious organisms can also be transferred to people.

Hookworm, for example, is transmitted through infected soil.

Method of prevention and control : It refers to the strategies, actions, or measures used to stop or reduce the occurrence, spread, or impact of a disease, hazard, or unwanted condition.

Prevention focuses on stopping a problem before it occurs (e.g., vaccination, hygiene, education).

Control focuses on reducing or managing a problem after it has occurred (e.g., treatment, quarantine, vector control).

(2) Explain the term endemic , epidemic and pandemic giving examples

(a) ENDEMIC: endemic disease is a disease that is constantly present within a specific geographic area or population group.

E.g Malaria is endemic in Nigeria

(b) EPIDEMIC: This is an sudden outbreak of disease that spreads quickly and affects many individuals E.g Small pox, Yellow fever

(C) PANDEMIC: This is an outbreak of a disease that spreads across countries or continents, affecting a large number of people worldwide. E.g COVID 19

(3) Define and distinguish between incidence and prevalence. Explain their importance in epidemiology with examples.

(a) INCIDENCE: This is the number of new cases of a given disease condition in a population within a specified period of time.

E.g The incidence of malaria in Ajebamidele community, Ado Ekiti , Ekiti State increased from 75 to 100 cases per 1,000 people last year.

(b) PREVALENCE: This is the total number number of cases both (new and existing) of a disease condition in a population at a specific point in time or over a certain period

E.g In Ajebamidele community with the population of 10,000 people, 1000 people currently have hypertension.

Difference between Incidence and Prevalence

1.Incidence measures the number of new cases in a population over a specific period.

Prevalence measures total number of existing cases (new and old) in a population at a specific

point in time.

2. Incidence is better for tracking diseases of short duration.

Prevalence is better for tracking diseases of long duration.

3. Incidence always includes a time period (e.g., per year).

Prevalence can be over a period of time.

IMPORTANCE OF INCIDENCE

1.Identifies causes and risk factors: ItHelps determine what increases the risk of developing a disease.

2.Tracks disease trends over time: Detects changes in disease occurrence, such as outbreaks or effects of interventions.

3.Evaluates prevention programs: A decrease in incidence indicates successful preventive measures (e.g., vaccination, sanitation).

4. Estimates population risk: Helps public health officials understand the likelihood of new cases developing in a community.

IMPORTANCE OF EPIDEMIOLOGY

1. Assesses disease burden:Shows how much of the population is affected and helps estimate the need for healthcare resources.

2.Guides healthcare planning: High prevalence may indicate a need for more facilities, medication, or health workers.

3.Monitors chronic conditions: Especially useful for long-term diseases (e.g., diabetes, hypertension, HIV).

4.Helps allocate resources and funding

5 Discribe the measures used in controlling Communicable disease at the community level

I. Health Education and Community Awareness: Educate the community on modes of disease transmission,Importance of hygiene (handwashing, food safety, clean water).

Safe sexual practices and use of preventive tools (e.g., condoms, mosquito nets).

Conduct community campaigns and school health programs.

Promote vaccination awareness and early health-seeking behavior.

II. Immunization

Implement and strengthen routine immunization programs (e.g., EPI).

Organize mass immunization drives during outbreaks (e.g., measles, polio).

Ensure cold chain maintenance for vaccine efficacy.

III. Environmental Sanitation

Improve water quality (safe drinking water supply).

Ensure proper waste disposal (solid and liquid).

Promote sanitary latrines to prevent fecal–oral transmission.

Control vectors by eliminating breeding sites (e.g., stagnant water for mosquitoes).

IV. Vector Control Measures: This includs;

Use insecticide-treated bed nets (ITNs).

Conduct fogging and spraying in vector-prone areas.

Promote environmental management to reduce vector habitats.

Biological control (e.g., larvivorous fish in stagnant water).

V. Surveillance and Early Detection: This includes;

Strengthen disease surveillance systems for early identification of cases.

Implement reporting and notification of notifiable diseases.

Use contact tracing and screening for high-risk groups.

VI. Isolation, Quarantine, and Treatment

Isolate infectious individuals to prevent spread.

Quarantine contacts when necessary (e.g., COVID-19, Ebola).

Provide prompt diagnosis and treatment to reduce infectivity.

VII. Chemoprophylaxis and Preventive Therapy

Provide preventive drugs where appropriate (e.g., antimalarials for travelers, isoniazid for TB contacts).

Ensure compliance with treatment to prevent drug resistance.

VIII. Food Hygiene and Safety: This involves Inspect food handling and storage practices, educate food handlers on personal hygiene. enforce food safety laws and regular health checks for handlers.

IX. Community Participation: This Involve local leaders, health committees, and volunteers in health promotion, encourage community-based surveillance and reporting,Promote ownership and accountability for community health.

X. Legislation and Policy Measures

Enforce public health laws (e.g., quarantine acts, food safety regulations).

Support national disease control programs (malaria, TB, HIV/AIDS)

5. Write short note on the following

a. Epidemiological triangle

b. Vehicle borne transmission

c.Point prevalence and period prevalence

a) The epidemiological triad consists of:

External agent

Susceptible host

Environment

In its most simplistic form, the host and agent are brought together and cause the disease in the host.

Agent:The agent is the virus, bacteria, parasite, or other organisms that cause the disease.

Host :Hosts carry the disease after an agent infects them. Hosts can get sick from the disease or act as a carrier.

Environment :The environment includes the air, soil, water, climate change, and other factors that influence the spread of infectious diseases.

b) Vehicle-borne transmission: This occurs when a pathogen is transmitted through a contaminated inanimate object or substance that acts as an intermediate carrier.

Common Vehicles include;

Food (e.g., contaminated meat, dairy, or produce)

Water (e.g., sewage-contaminated drinking water)

Blood (e.g., through transfusions or shared needles)

Fomites (objects like utensils, doorknobs, medical instruments, or bedding)

Examples:

Cholera: This transmitted through contaminated water.

Salmonellosis: This transmitted through contaminated food.

Hepatitis B or HIV : This is transmitted through contaminated needles or blood transfusions.

Tetanus: This transmitted when Clostridium tetani spores enter the body via contaminated objects (like nails or soil).

c) Point prevalence is the proportion of individuals in a population who have a specific disease or condition at a particular point in time.

Period prevalence is the proportion of individuals in a population who have a particular disease or condition at any time during a specified period (such as a week, month, or year).